

# Notice of Allowability

Application No.

09/993,627

Examiner

John S. Chu

Applicant(s)

IWAI ET AL

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/29/03.
2. ☒ The allowed claim(s) is/are 1-10.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

John S. Chu  
Primary Examiner  
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### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Matthew Jacobs on March 4, 2004.

The application has been amended as follows:

Claim 1, line 17 replace "eater" with - -ester - -to correct a typographical error.

### **REASONS FOR ALLOWANCE**

2. The following is an examiner's statement of reasons for allowance: The claimed invention is drawn to the following:

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1. A chemical-amplification positive-working photoresist composition which comprises, as a uniform solution in an organic solvent:

- (A) a resinous compound capable of being imparted with increased solubility in an aqueous alkaline solution by interacting with an acid;
- (B) an acid-generating compound capable of generating an acid by irradiation with a radiation; and
- (C) an organic solvent,

wherein the resinous compound as the component (A) is a copolymer consisting of the monomeric units to constitute the main chain structure thereof comprising (a1) acrylic or methacrylic acid ester units having a solubility-reducing group, (a2) monomeric units of an ester compound between acrylic or methacrylic acid and a lactone ring-containing bridged polycyclic saturated alcohol and (a3) monomeric units of an ester compound between acrylic or methacrylic acid and a straight-chain alcohol substituted by a hydroxyl group, alkoxy group or acyl group.

The inventive step of the photoresist is the presence of the copolymer containing monomer (a3). The use of a copolymer comprising a monomer (a3) having an ester made by reacting a straight-chain alcohol with a (meth)acrylic acid present finds distinction over the closest prior art of reference to HASEGAWA et al, which discloses the same copolymer having an ester unit made from a branched-chain alcohol compound and an (meth)acrylic acid.

Applicants have submitted a declaration under Rule 1.132 wherein comparative evidence has been submitted and is seen to provide an unexpected result over the closest prior art reference. This evidence is the improved line edge roughness of claimed invention over the prior art photoresist composition having a copolymer with an ester made from a branched-chain alcohol compound and a (meth)acrylic acid. The actual difference is line edge roughness of 6.5 nm found in the claimed invention to a line edge roughness of 11.0 found in the prior art photoresist composition upon processing.

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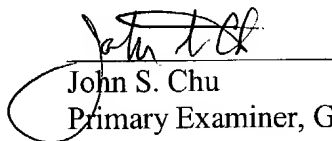
Because of the comparative evidence submitted showing an unexpected results of the claimed invention over the closest prior art of record, claims 1-10 are seen as overcoming the prima facie case of obviousness due to the secondary considerations of unexpected results and the claims are seen as allowable and passed to issue.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

The fax phone number for the USPTO is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

  
John S. Chu  
Primary Examiner, Group 1700

J.Chu  
March 4, 2004